

### 3.1 INTRODUCTION

The National Environmental Policy Act (NEPA) regulations promulgated by the federal Council on Environmental Quality (CEQ) at 40 CFR Parts 1500-1508 and the Federal Highway Administration's (FHWA) regulations, *Environmental Impact and Related Procedures* (23 CFR Part 771), require consideration of reasonable alternatives to a proposed project. This chapter of the Draft Environmental Impact Statement (DEIS) discusses the potential alternatives to the Portageville Bridge Project that were considered, discusses the reasons for dismissing certain potential alternatives from consideration, and identifies the Preferred Alternative.

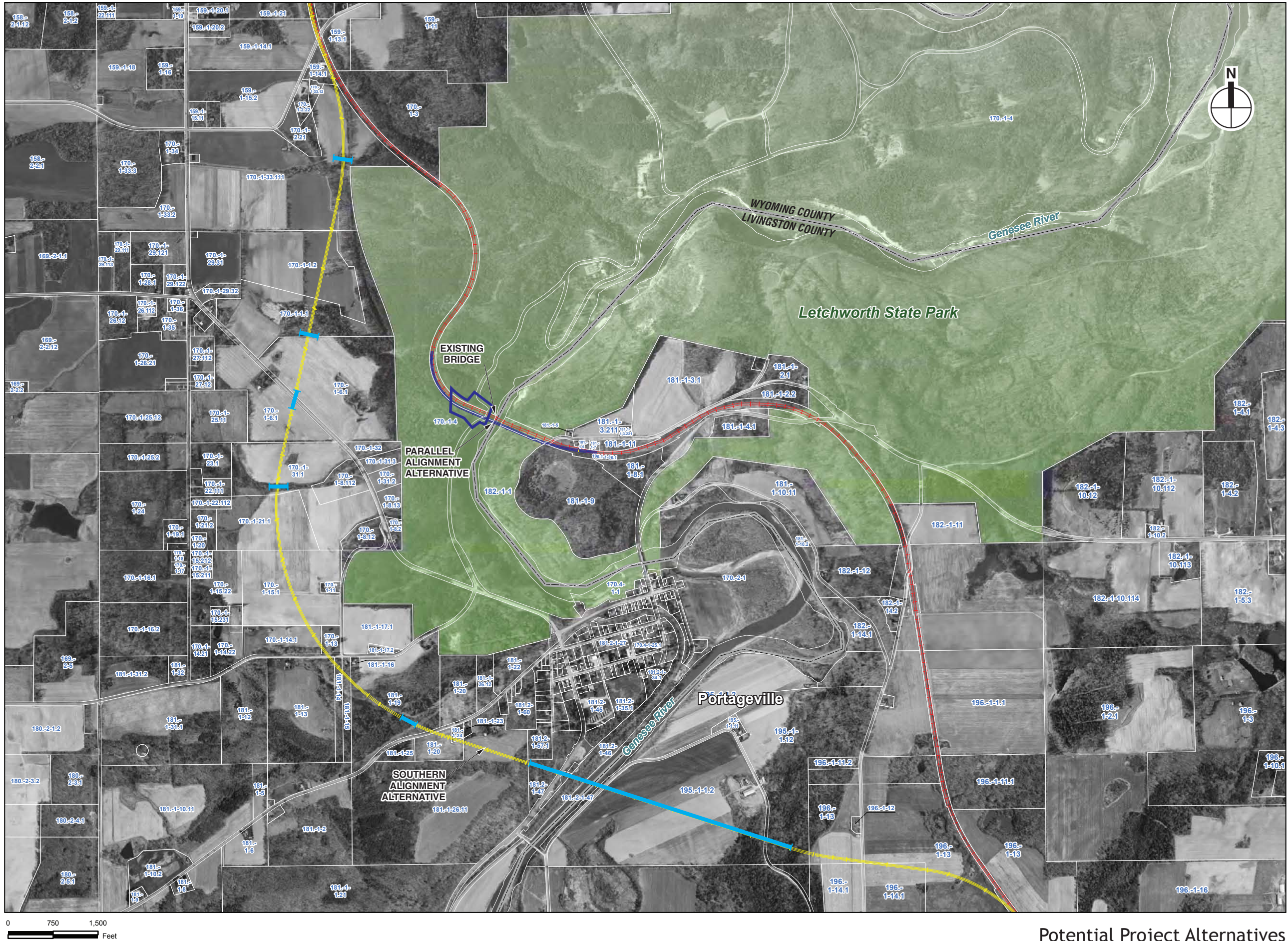
The potential Project alternatives that were considered for this DEIS, which were initially developed during the previous State Environmental Quality Review Act (SEQRA) scoping process, are identified in **Table 3-1** and in **Figure 3-1**. These potential alternatives are also described below.

**Table 3-1**  
**Potential Alternatives for the Genesee River Crossing**

Alternative	Description
1	No Action Alternative
2	Repair / Retrofit Existing Bridge
3	New Bridge on Same Alignment
4	New Bridge on Parallel Alignment / Remove Existing Bridge
5	New Bridge on Parallel Alignment / Convey Existing Bridge
6	Southern Alignment / Remove Existing Bridge
7	Southern Alignment / Convey Existing Bridge
8	Reroute Rail Traffic / Remove Existing Bridge
9	Reroute Rail Traffic / Convey Existing Bridge

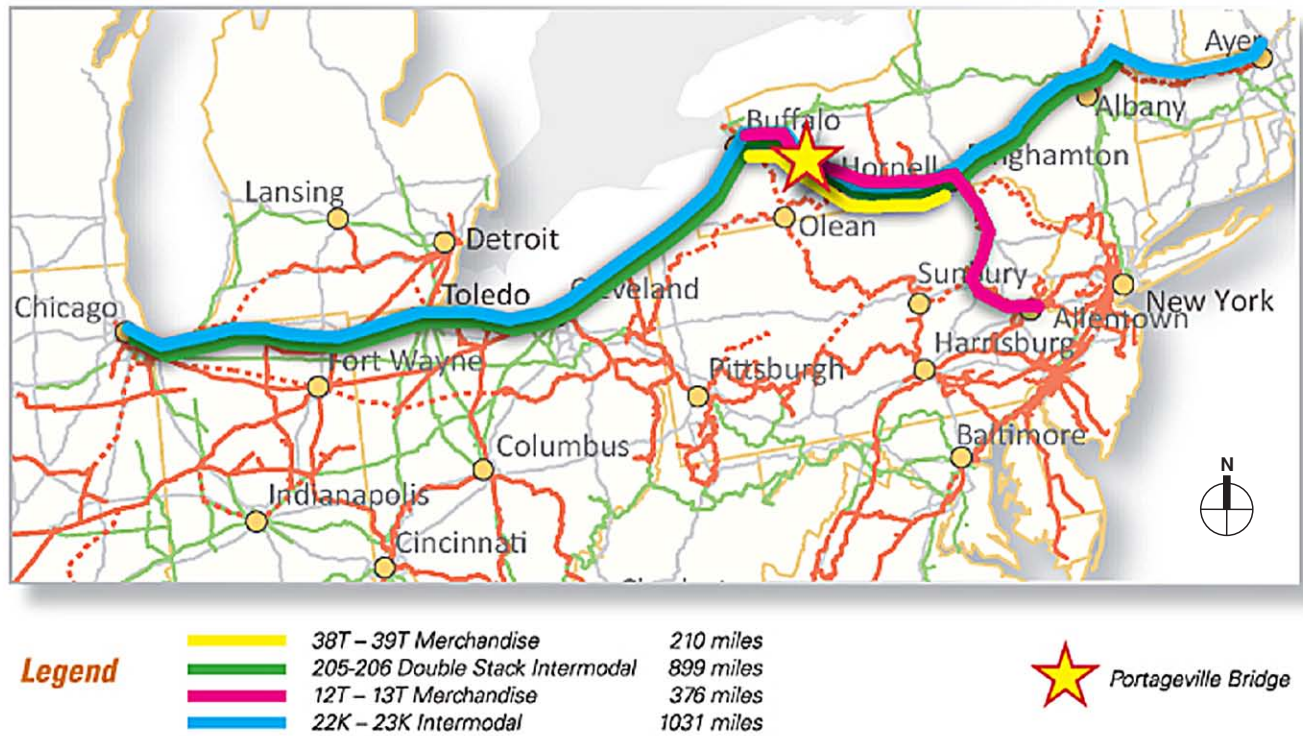
- **Alternative 1—No Action:** The No Action Alternative assumes no work in the Project area other than initiatives planned by others or implemented as part of routine maintenance. Rail traffic on the Southern Tier route would continue to be restricted, as the bridge cannot accommodate the weight of industry-standard rail cars and allows operations only at a very low speed. This alternative serves as a baseline for comparison to the Build alternative(s).
- **Alternative 2—Repair / Retrofit Existing Bridge:** Alternative 2 would involve repairing and retrofitting the existing bridge to the capacity needed to meet current and future freight transport needs. This would require each of the bridge's deficient members to be strengthened or replaced. Alternative 2 would involve closures of the existing bridge for certain rehabilitation activities, resulting in the rerouting and partial cessation of train traffic for up to 18 months. Upon completion, the bridge would continue to be dedicated to rail traffic, and pedestrian access would remain prohibited.
- **Alternative 3—New Bridge on Same Alignment:** Alternative 3 would involve demolishing the existing bridge and piers, and constructing a new bridge for rail freight service at the

- Alternative 4 or 5
- Alternative 6 and 7
- New Bridges Required for Alternatives 6 and 7
- Existing Railroad
- Parcels
- County Boundary

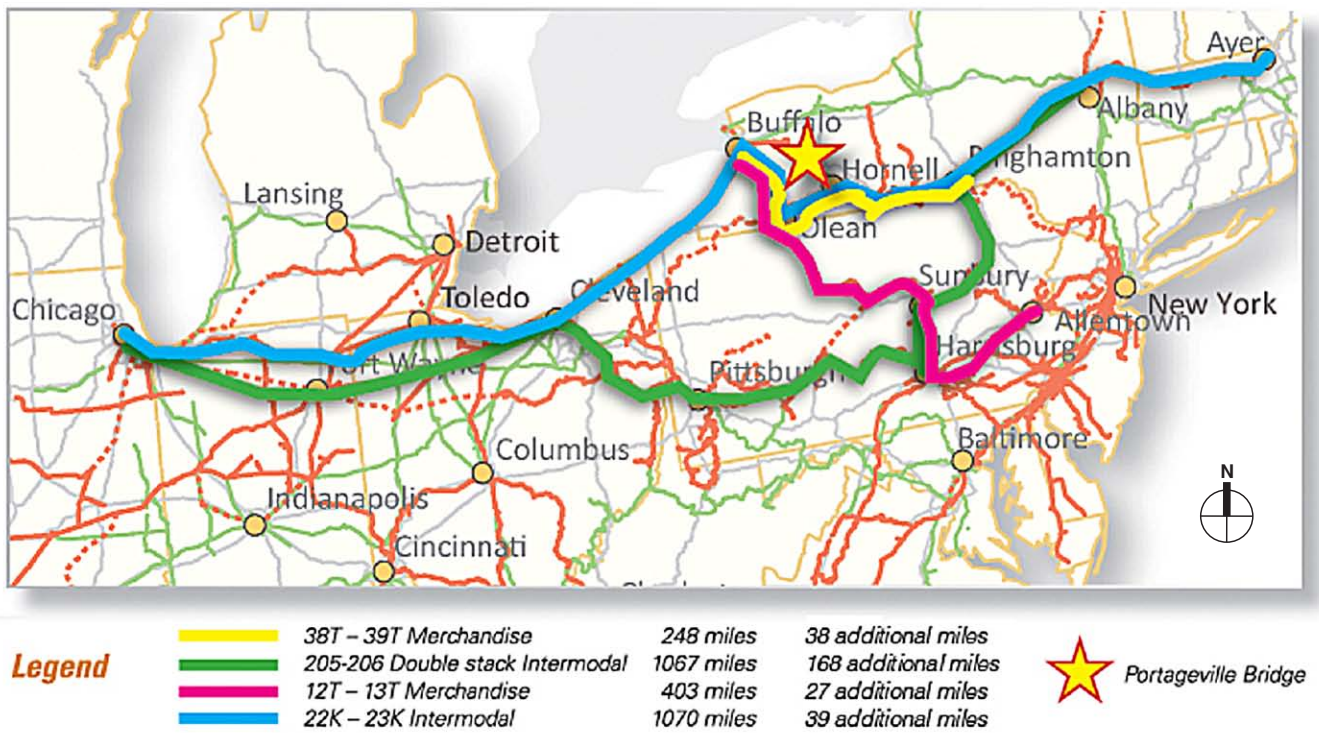


same location and alignment. If the new bridge were built using the same piers, this alternative would involve an 18-month shutdown of the crossing to rail traffic and the rerouting and partial cessation of rail traffic. To replace the existing bridge with an arch bridge would require a longer shutdown, estimated at 31 months. Upon completion, the new bridge would be dedicated to rail freight traffic, and pedestrian access would be prohibited.

- **Alternative 4—New Bridge on Parallel Alignment / Remove Existing Bridge:** Alternative 4 involves the construction of a new single-track railroad bridge approximately 75 feet south of the existing bridge. New approach tracks would also be constructed for approximately 1,200 feet on either side of the bridge both to reduce the curvature of the existing alignment and to realign rail traffic through the new crossing. The existing bridge would remain operational during construction of the new bridge. Upon the opening of the new bridge, the existing tracks between the diverted right-of-way and the existing bridge would be removed. The new bridge would be dedicated to rail freight traffic, and pedestrian access would be prohibited (see **Figure 3-1**).
- **Alternative 5—New Bridge on Parallel Alignment / Convey Existing Bridge:** Like Alternative 4, Alternative 5 would result in a new bridge dedicated to rail freight traffic, with pedestrian access prohibited. The new bridge would be located approximately 75 feet south of the existing bridge, and new approach tracks would be constructed for approximately 1,200 feet on either side of the bridge. With Alternative 5, most of the existing bridge would remain but would no longer serve rail traffic. The existing bridge would be conveyed to a suitable new owner, who would be responsible for any repairs, maintenance, or modifications to the existing structure. Upon completion of the new bridge and realigned rail right-of-way, the existing tracks between the diverted right-of-way and the existing bridge would be removed (see **Figure 3-1**).
- **Alternative 6—Southern Alignment / Remove Existing Bridge:** This alternative would involve a new, 4.5-mile rail freight line and related infrastructure constructed outside of Letchworth State Park. The new route would be south and west of the lower end of the park. It would divert from the existing alignment at Denton Corners Road and rejoin the alignment at Springbrook Road after crossing the Genesee River. Alternative 6 would include the construction of one new, major bridge (approximately one mile long), two, new short overpasses, and other new grade-separated structures and at-grade crossings. The existing bridge, piers, and railroad tracks through Letchworth State Park would be removed (see **Figure 3-1**). Pedestrian access to the new bridge would be prohibited.
- **Alternative 7—Southern Alignment / Convey Existing Bridge:** Alternative 7, like Alternative 6, would result in a new rail alignment to the south and east of Letchworth State Park with a new freight rail bridge over the Genesee River. Pedestrian access to the new bridge would be prohibited. However, Alternative 7 would not remove the existing bridge and would instead convey the bridge to a suitable new owner. The new owners would be responsible for repairs, maintenance, or modification to the existing structure (see **Figure 3-1**).
- **Alternative 8—Reroute Rail Traffic / Remove Existing Bridge:** Under Alternative 8, Norfolk Southern would cease using the Southern Tier rail route and remove the existing rail bridge over the Genesee River. This alternative would require that freight traffic use alternative routes between Binghamton and Buffalo (see **Figure 3-2**).
- **Alternative 9—Reroute Rail Traffic / Convey Existing Bridge:** Like Alternative 8, Alternative 9 would require that Norfolk Southern cease use of the Southern Tier rail route (see **Figure 3-2**). In Alternative 9, Norfolk Southern would not remove the rail bridge over the Genesee River but would instead convey it to a suitable new owner that would be responsible for repairs, maintenance, or modification of the existing structure.



Current Rail Freight Routing using Portageville Bridge



Alternative Rail Freight Routing without Portageville Bridge

Alternative Rail Freight Routing  
Figure 3-2

All of the potential alternatives from the SEQRA DEIS, including those that were considered and eliminated from detailed study, were presented to the public during the NEPA scoping phase. Using the previous alternatives analyses conducted for the SEQRA DEIS, and in consideration of public and agency input received during development and review of the SEQRA DEIS and in the NEPA scoping phase, a number of potential alternatives were eliminated from further study in this NEPA DEIS. Based on that evaluation, this NEPA DEIS identifies a Preferred Alternative for the Project.

Section 3.2 of this DEIS chapter identifies and discusses potential alternatives that were eliminated from further study. Section 3.3 describes the alternatives that have been carried forward for detailed evaluation in this DEIS.

### **3.2 POTENTIAL ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER STUDY**

A two-level screening process was used to evaluate the potential alternatives. The first screening level eliminated alternatives that clearly would not meet the Project's purpose and need (see Chapter 2, "Project Context"). The alternatives that remained were then evaluated to identify those that would best meet the Project purpose and need (discussed in Chapter 2), and would also be reasonable in terms of engineering considerations, cost effectiveness, and environmental impacts. The alternatives were also evaluated in consideration of public and agency input.

Based on the alternatives screening and consideration of public and agency comments, seven potential alternatives were eliminated from further consideration in this NEPA DEIS, as discussed below.

#### **3.2.1 Alternative 2—Repair / Retrofit Existing Bridge**

Alternative 2 would involve repairing and retrofitting the existing bridge to the capacity needed to meet current and future freight transport needs. Following an inspection of the existing bridge, Norfolk Southern determined that the extent of structural deficiencies precluded Alternative 2 from being a reasonable alternative. The necessary repairs and retrofits could not be feasibly undertaken while the bridge is open to rail traffic; therefore, Alternative 2 would require rail traffic to be rerouted for 18 months, depriving customers of the efficiencies of the Southern Tier route, including temporarily eliminating rail freight service to several locations and for several customers and requiring complex re-routing over other routes maintained by other railroads. Norfolk Southern estimates that this alternative would require an additional \$22 million in operating costs and result in five-hour service delays during construction and the potential permanent loss of affected customers to other modes or other freight carriers. Moreover, Alternative 2 would not effectively extend the bridge's useful life nor increase its load carrying capacity to the Cooper E80 standard, and thus would do little to improve the efficiency of rail operations. Even with repairs and retrofits, fatigue and corrosion would continue to degrade structural elements of the bridge, and there would continue to be substantial maintenance requirements following the retrofit. The maintenance requirements would accelerate over time as the structure continues to age. For these reasons, Alternative 2 could jeopardize the long-term viability of the Southern Tier route and does not meet the Project's purpose and need. Therefore, Alternative 2 was eliminated from further consideration.

#### **3.2.2 Alternative 3—New Bridge on Same Alignment**

Alternative 3 would involve demolishing the existing bridge and piers, and constructing a new bridge at the same location and alignment. This would shut down the Southern Tier rail alignment during the 18- to 31-month construction period (the length of the construction period

would depend on the type of replacement bridge constructed). As with Alternative 2, all rail freight would be routed to other rail lines, which would temporarily eliminate rail freight service to several locations and customers. As a result, Norfolk Southern estimates that this alternative would require an additional \$22 million in operating costs and result in five-hour service delays during construction and the potential permanent loss of affected customers to other modes or other freight carriers. In addition, Alternative 3 would remove the existing bridge, which is a contributing element to Letchworth State Park's listing on the State and National Register of Historic Places (S/NRHP) and a prominent visual feature of the park. For these reasons, Alternative 3 was determined to be unreasonable and was eliminated from further consideration.

### **3.2.3 Alternative 5—New Bridge on Parallel Alignment / Convey Existing Bridge**

Alternative 5 would involve construction of a new rail bridge approximately 75 feet south of the existing bridge, with the existing bridge remaining for a non-railroad purpose under new ownership. Rail tracks would be modified for about 1,200 feet on either side of the bridge to accommodate the new bridge alignment. Upon completion of the new bridge, Norfolk Southern would convey the existing bridge, as it would no longer serve freight rail purposes. Maintenance, repairs, and any modifications to the existing bridge would be the responsibility of the new owner.

Alternative 5 was evaluated in the SEQRA DEIS for the Project and its impacts were identified in the SEQRA DEIS. While this alternative would allow the bridge structure (contributing resource to S/NRHP-listed Letchworth State Park) to remain in place, it would not avoid any of the other adverse effects of Alternative 4 on historic resources related to relocation of a segment of Park Road, the Gorge Trail, the Mary Jemison Trail, the Highbridge Parking Lot and sign, and fieldstone walls. Furthermore, Alternative 5 would result in additional impacts related to historic resources as follows:

- While Alternative 5 would preserve the majority of the existing bridge, some alterations to the bridge would nonetheless be required. To accommodate the proposed realignment of a segment of Park Road, which would be needed to allow the new bridge's arch to be founded in the gorge wall, the westernmost segment of the existing bridge must be removed. Specifically, the western two spans of the bridge approach must be removed, including the structural pier of the bridge on the west side of Park Road and the bridge deck spanning from the pier on the east side of Park Road to the west abutment. This would result in the removal of major structural elements of the bridge and would alter the visual connection of the bridge to the west bank of the Genesee River.
- Alternative 5 would result in two side-by-side bridges, which would be more obstructive to scenic views of the gorge than a single bridge (Alternative 4), and the presence of two bridges would constitute an adverse visual impact. This adverse impact would also adversely affect the historic character and setting of the Letchworth State Park gorge crossing, which has historically had only one rail bridge over the Genesee River. In views south from various viewpoints within Letchworth State Park, the existing bridge would be visible in context of the new bridge behind it, negatively affecting views and the historic gorge setting.

In addition, Alternative 5 would maintain the existing bridge piers within the Genesee River, which would not allow the river to return to free-flowing conditions. Alternative 5 would also be less compatible with the Genesee River's status as a protected river under the federal Genesee River Protection Act and as a New York State Scenic River, because of its adverse visual impacts.

Throughout the preparation and public review of the SEQRA DEIS and throughout the scoping process for this NEPA DEIS, the New York State Office of Parks, Recreation and Historic

Preservation (OPRHP), which is responsible for Letchworth State Park, has declined interest in acquiring the existing bridge. Over the past six years as the SEQRA DEIS and this NEPA DEIS have been prepared, including multiple public review periods during that time, no other entity has come forward offering to take responsibility for the bridge. Thus, an alternative suitable owner of the existing bridge that is able to bear the costs of acquisition, rehabilitation, and maintenance has not been identified.

For these reasons, Alternative 5 was determined to be unreasonable and has been eliminated from further consideration in this DEIS.

#### **3.2.4 Alternative 6—Southern Alignment / Remove Existing Bridge**

Alternative 6 would shift the Southern Tier route to a new, 4.5-mile-long rail route and related infrastructure outside Letchworth State Park, to avoid impacts to the park, with a new crossing of the Genesee River outside the park. The new route would be south and west of the southern end of the park. After completion of the new route, the existing bridge would be demolished.

Alternative 6 would divert from the existing alignment at Denton Corners Road (on the west side of the river in Wyoming County) and rejoin the alignment at Springbrook Road (on the east side of the river in Livingston County) after crossing the Genesee River to the south of the Village of Portageville (see **Figure 3-1**). Alternative 6 would include the construction of one new, major bridge (approximately one mile long); construction of two new, shorter overpasses; and crossing of three streams that are tributaries to the Genesee River.

Alternative 6 would avoid the use of Letchworth State Park for railroad right-of-way, but it would have impacts on adjacent land and require the construction of three new at-grade crossings with local roadways, counter to New York State policy and Norfolk Southern policy regarding rail crossings. This alternative would require acquisition of approximately 54 acres of land, and would traverse or be adjacent to agricultural land, residential and agricultural structures, and historic cemeteries. The requirements to implement this alternative, including rail and bridge infrastructure and property acquisition, would cost more than \$250 million, which is more than three times the cost of the Preferred Alternative.

Alternative 6 would not meet the Project purpose of providing a modern rail crossing of the Genesee River at its current location. Alternative 6 would also include removing the existing bridge, which is a contributing element to Letchworth State Park's S/NRHP listing and a prominent visual feature of the park. In addition, public comments during scoping by the Citizens' Advisory Committee (see Chapter 4.1, "Process, Agency Coordination, and Public Participation," section 4.1-4) overwhelmingly opposed Alternative 6.

Alternative 6 does not meet the Project purpose and need and was determined to be an unreasonable alternative. Therefore, this alternative was eliminated from consideration.

#### **3.2.5 Alternative 7—Southern Alignment / Convey Existing Bridge**

Alternative 7 would involve construction of the same southern alignment, outside Letchworth State Park, as Alternative 6 (see **Figure 3-1**). However, Alternative 7 would not remove the existing bridge and would instead convey the bridge to new owners. The new owners would be responsible for repairs, maintenance, or modification to the existing structure.

Alternative 7 would not meet the Project purpose of providing a modern rail crossing of the Genesee River at its current location. Like Alternative 6, Alternative 7 would involve Project cost that would be substantially greater than other alternatives and would require substantial property acquisition. Alternative 7 would maintain the existing bridge, which could allow for a non-rail crossing of the Genesee River if a suitable new owner could be found. However, no suitable

owner has been identified. Public comments by the Citizens' Advisory Committee overwhelmingly opposed development of a southern alignment.

Alternative 7 does not meet the Project purpose and need and was determined to be an unreasonable alternative. Therefore, this alternative was eliminated from further consideration.

### **3.2.6 Alternative 8—Reroute Rail Traffic / Remove Existing Bridge**

Under Alternative 8, Norfolk Southern would cease using a substantial portion of the Southern Tier route and remove the existing rail bridge over the Genesee River. This alternative would require that rail freight traffic use alternative routes between Binghamton and Buffalo (see **Figure 3-2**). Alternative 8 would restrict or remove rail freight service to a number of communities and as such has the potential for negative impacts to the region's economy. Alternative 8 would also remove the existing bridge, which is a contributing element to Letchworth State Park's listing on the S/NRHP and a prominent visual feature of the park. Alternative 8 fails to meet the Project's purpose and need and therefore was eliminated from further consideration.

### **3.2.7 Alternative 9—Reroute Rail Traffic / Convey Existing Bridge**

Like Alternative 8, Alternative 9 would cease using a portion of the Southern Tier route, resulting in adverse effects on Norfolk Southern's operations the region's economy. Alternative 9 could allow for the existing bridge to provide non-rail travel across the Genesee River if a suitable new owner was found. However, no suitable alternative owner has been identified. Since this alternative would not meet the Project's purpose and need, it was eliminated from further consideration.

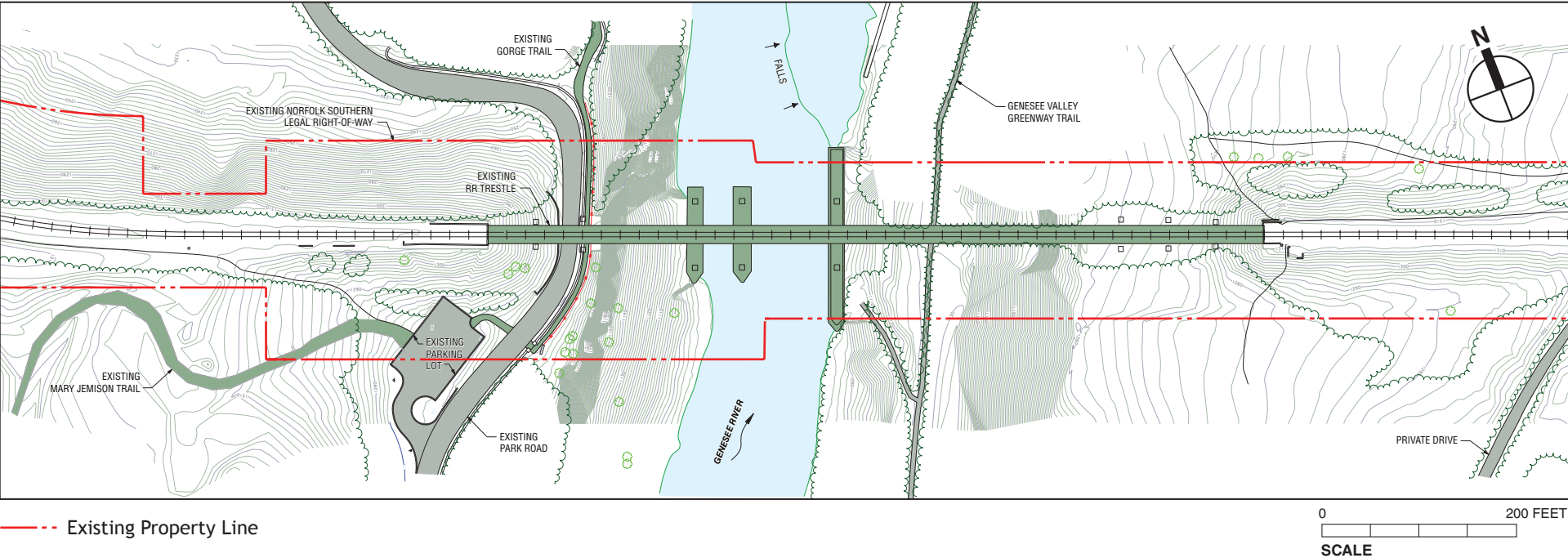
## **3.3 DESCRIPTION OF REASONABLE ALTERNATIVES**

Based on the alternatives screening described above, two alternatives have been carried forward for detailed evaluation in this DEIS: Alternative 4—New Bridge on Parallel Alignment / Remove Existing Bridge and Alternative 1—No Action Alternative. Alternative 1 serves as the baseline for the evaluation of the potential impacts of Alternative 4.

Because the alternatives screening process has identified Alternative 4 as the alternative that would meet the Project's purpose and need and its objectives, and would be the most reasonable, FHWA and the New York State Department of Transportation (NYSDOT) have identified Alternative 4 as the Preferred Alternative for the Project. As such, Alternative 4 is hereafter referred to as the Preferred Alternative. Similarly, Alternative 1 is hereafter referred to as the No Action Alternative. These alternatives are described below.

### **3.3.1 No Action Alternative**

The No Action Alternative assumes that the existing Portageville Bridge will remain in service and will be subject only to required maintenance. **Figure 3-3** illustrates the location of the existing bridge. The No Action Alternative would involve minimal capital investment to continue operation of the bridge to the extent feasible. Norfolk Southern would continue its program of frequent inspections and continuous monitoring, including weekly inspections and 24-hour monitoring of vibration and fatigue, and necessary repairs. The existing speed and load restrictions on the bridge would remain in place, with trains operating at 10 MPH across the bridge, and although pedestrian access would continue to be prohibited by Norfolk Southern, safety concerns related to the risk of trespassing would remain. Given the age of the bridge, it is anticipated that it would eventually be deemed unsafe for continued freight operations. At that time, the bridge would be closed to rail traffic and would remain in place without substantial



Existing Norfolk Southern Right-of-Way  
at Genesee River Crossing  
Figure 3-3

further enhancements or alteration. Without a bridge across the Genesee River, Norfolk Southern would either have to 1) eliminate rail freight service to several locations and for several customers, and reroute trains over other routes maintained by other railroads, which is logistically complex and would add five-hour service delays; and/or 2) cease using the Southern Tier route altogether, which would result in the loss of customers and routes. This alternative would not meet the Project's purpose and need, but it is carried forward to serve as the baseline for evaluating the potential impacts of the Preferred Alternative.

### **3.3.2 Preferred Alternative**

The Preferred Alternative would result in a new rail freight bridge built to support existing and anticipated future rail freight operations on the Southern Tier route. The new structure would be a single-track, 900-foot-long bridge. The centerline of the new bridge would be located approximately 75 feet south of the centerline of the existing bridge. A parallel alignment north of the existing bridge was also considered, but such an alignment was determined infeasible as it would involve construction in very close proximity to the Upper Falls of the Genesee River in Letchworth State Park. Thus, an alternative north of the existing bridge would have greater impacts on the scenic, historic, and visual character of Letchworth State Park. The alignment south of the bridge would be more distant from the falls than the existing bridge.

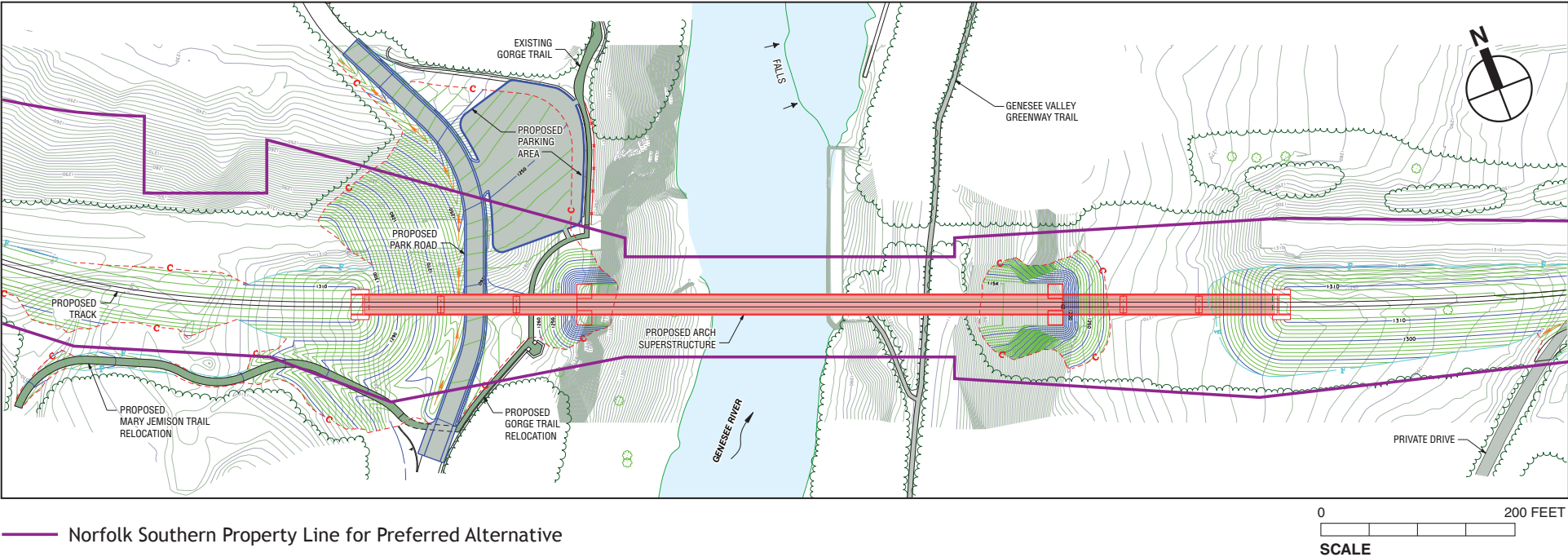
The relocation of the bridge to the south would require a realignment of the railroad as it approaches the crossing from the east and from the west. New approach tracks would be laid approximately 1,200 feet east and 1,200 feet west of the existing bridge. **Figure 3-4** provides a plan view of the new bridge in the Preferred Alternative. Norfolk Southern would acquire approximately 2.71 acres of new railroad right-of-way to realign the tracks. Approximately 1.95 acres of the new right-of-way are currently part of Letchworth State Park. The remaining 0.76 acres would be acquired from a private land owner. In addition, Norfolk Southern would obtain a permanent easement from OPRHP in a 0.21-acre area adjacent to the existing embankment where access for ongoing slope stabilization is required.

In addition to these permanent acquisitions, Norfolk Southern would seek temporary easements for a total of 1.55 acres of Letchworth State Park for construction staging and to construct certain improvements to park facilities affected by the Project, as discussed later in this chapter.

The new bridge would be built to meet industry weight standards (the Cooper E80 live load, which allows a load-carrying capacity of 286,000-pound freight cars). It would also be built to accommodate the potential wind load associated with double-stack train cars. The bridge would accommodate trains operating at 35 MPH, instead of the current speed of 10 MPH (the bridge itself would accommodate speeds of up to 60 MPH, but Norfolk Southern anticipates an operating speed of 35 MPH because of the curvature on approach tracks and the location of the facility within Letchworth State Park). The new bridge would complement Norfolk Southern's previous upgrades of other structures on the Southern Tier route.

As with the existing bridge, pedestrian access would be prohibited on the new bridge. Fencing, signage, and/or other safety devices would be implemented to discourage trespassing on the railroad right-of-way and new river crossing.

With the Preferred Alternative, a portion of existing Park Road would be relocated to make space for the new bridge structure's foundations, and a small parking area (Highbridge Parking Area) would be relocated from an area south of the existing bridge within Norfolk Southern's right-of-way to parkland north of the right-of-way. In addition, the trailheads for two trails, the Mary Jemison Trail and the Gorge Trail, would be relocated from Norfolk Southern property to park property.



Construction of the new bridge, including realignment of the tracks and removal of the existing rail bridge, would occur over approximately 27 months and would cost an estimated \$67.5 million. The existing bridge would remain operational during construction. Following construction, the existing bridge, piers, and unused track would be removed. After construction of the new bridge and removal of the old bridge are complete, approximately 2.33 acres of the existing right-of-way encompassing the old bridge location would be conveyed to OPRHP for inclusion in the park.

### 3.3.3 Design Criteria for Reasonable Alternatives

#### *Design Standards*

The criteria used for the design of a replacement bridge or repair and retrofit of the existing bridge are informed by the current American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering and comply with Norfolk Southern's specifications. The AREMA manual contains principles, data, specifications, plans, and economic factors pertaining to the engineering, design, and construction of the fixed plant of railways (except signals and communications), and allied services and facilities. Many railroads use the manual as a basis for their engineering standards and may add to it to describe their specific needs, which is the case with the Norfolk Southern specifications.

**Table 3-2** identifies the critical design elements for the Preferred Alternative. Critical design elements for a replacement structure for the Portageville Bridge are that the new bridge be designed to support train traffic across the bridge at an operating speed of 35 MPH and that the structural capacity meet the Cooper E80 standard for nominal railroad loading, which is the standard design train used in the AREMA manual. Furthermore, because of the location of the bridge within Letchworth State Park, aesthetics and environmental context are important in the design of the span over the gorge. This is further discussed below with respect to the selection of the bridge type.

**Table 3-2**  
**Critical Design Elements**

Design Element	Value	Source
Design Speed	35 mph	Norfolk Southern
Structural Load	Cooper E80	AREMA
Horizontal Clearance	9'0"	AREMA
Vertical Clearance	23'0"	AREMA
<b>Note:</b> Although the bridge itself could accommodate speeds of up to 60 MPH, Norfolk Southern anticipates an operating speed of 35 MPH because of the curvature on approach tracks and the location of the bridge within Letchworth State Park.		

#### *Bridge Type*

A study was performed to select the preferred bridge type to be considered for the alignment alternatives. The characteristics of each bridge type make some better suited than others depending on the demands of the loading and the physical constraints in which it would be used. For the Project, four main factors were identified and used in the selection of the appropriate bridge types—geography, loading, aesthetics, and cost.

Three bridge types were considered in the study—trestle bridge, truss bridge, and arch bridge. Based on the results of the study, the arch bridge was determined as the preferred type for the Project. While the costs of an arch bridge would be similar to the truss bridge, the arch requires

less structure within the gorge and would result in less obstructed views of the river. Furthermore, erecting the arch by cantilevering the spans would lessen impacts on the gorge during construction.

## **3.4 ENGINEERING CONSIDERATIONS**

### **3.4.1 Operations and Maintenance**

The bridge would accommodate only freight rail traffic. Although the bridge structure itself could accommodate speeds of 60 MPH, Norfolk Southern anticipates a normal operating speed of 35 MPH for the bridge, because of the curves on both the east and west approaches and because of the alignment's location passing Letchworth State Park. Fencing, signage, and/or other safety devices would be implemented to discourage trespassing on the railroad right-of-way.

Like the existing bridge, the bridge would be owned and maintained by Norfolk Southern. Norfolk Southern has a regular maintenance and inspection protocol and schedule for its facilities. Norfolk Southern also inspects its infrastructure frequently and undertakes maintenance as necessary to sustain operations, so as to meet applicable standards for safe, efficient operations.

### **3.4.2 Multimodal**

Under the No Action Alternative, the existing bridge would continue to be owned and operated by Norfolk Southern for freight rail traffic. The use of the bridge by vehicles, pedestrians, and cyclists would continue to be prohibited.

With the Preferred Alternative, the new bridge would serve only freight rail traffic. Vehicular traffic, pedestrians, and bicycles would be prohibited from using the new bridge. The U.S. Department of Homeland Security advises against pedestrian access to new freight bridges, given the importance of freight railways to the nation's economy and security. Fencing, signage, and/or other safety devices would be implemented to discourage trespassing on the railroad right-of-way.

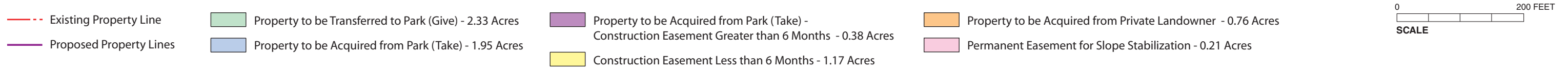
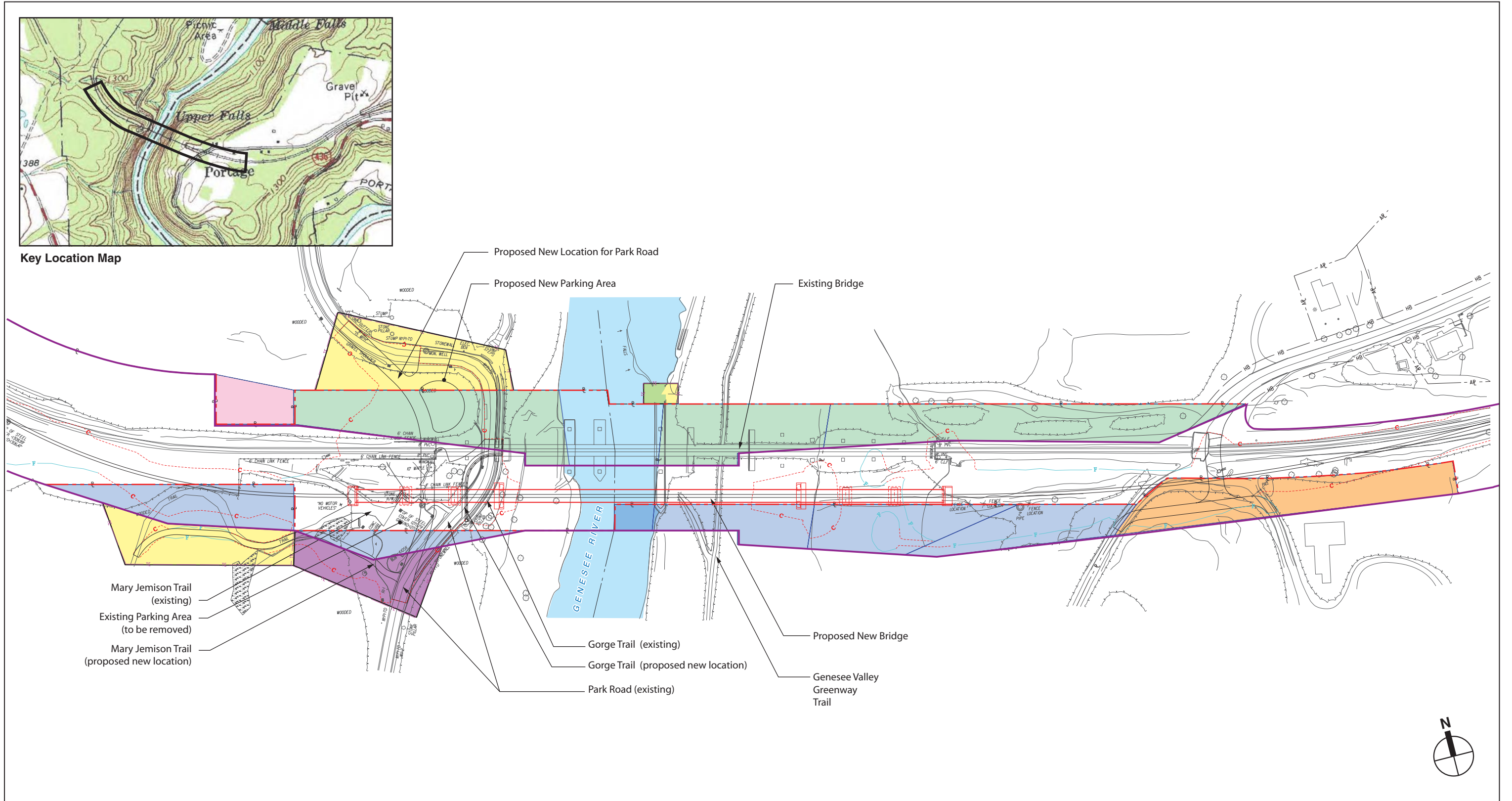
### **3.4.3 Infrastructure**

#### *Proposed Railway Right-of-Way*

The No Action Alternative would maintain the existing alignment and would not require any property acquisition. Implementation of the Preferred Alternative would require permanent acquisition of approximately 2.71 acres of property. In addition, approximately 1.55 acres would be used temporarily during construction as construction easement areas. As shown in **Figure 3-5**, 1.95 acres of the land to be acquired are located in Letchworth State Park and approximately 0.76 acres is located outside the park and is privately owned. In addition, Norfolk Southern would obtain a permanent easement from OPRHP for a 0.21-acre area adjacent to the existing embankment where access for ongoing slope stabilization is required.

Following completion of the new bridge's construction, Norfolk Southern would transfer approximately 2.33 acres of its existing right-of-way to OPRHP to be incorporated into Letchworth State Park.

Norfolk Southern is coordinating with OPRHP regarding the transfer of the park property. Since the Project would convert property that is currently parkland that received federal funds under the Land and Water Conservation Fund (LWCF) Act from recreational use to a non-park use, approval by the National Park Service (NPS) is required for the conversion and replacement of parkland subject to the LWCF Act. Any NPS approval must be based on a determination that the



conversion meets the conditions under Section 6(f) of the LWCF Act (see Chapter 6 of this DEIS for the Section 6(f) evaluation). For the private property outside the park that is required for the Project, Norfolk Southern will acquire the property from the landowner under the authority granted railroads to condemn property under the New York Railroad Law. Any acquisition by condemnation of the private property has and will continue to follow the requirements of the New York State Eminent Domain Procedure Law, as well as the Uniform Relocation and Real Property Acquisition Policies Act of 1970, as applicable. At this time, in accordance with applicable law, which requires Norfolk Southern to attempt to acquire private property by negotiated agreement before moving forward with condemnation of it, Norfolk Southern has negotiated a fee acquisition of the private property by agreement among the parties pursuant to a purchase option. In the event that acquisition of the private property outside the park pursuant to the purchase option does not occur, Norfolk Southern in accordance with the reference law will condemn the property.

#### *Special Geometric Design Elements*

The design of the Preferred Alternative would be informed by the AREMA Manual for Railway Engineering and comply with Norfolk Southern Standards and Specifications. There would be no non-conforming features within the Project limits.

#### *Track and Roadbed*

The track and roadbed would be informed by the AREMA Manual and comply with Norfolk Southern's design standards. The track bed would consist of continuously welded rail with wooden ties and a ballasted deck.

To accommodate the proposed arch bridge's foundations on the west side of the river, a portion of existing Park Road must be shifted slightly to the west. In addition, several park features that currently encroach on the Norfolk Southern right-of-way would be moved: the small parking area (Highbridge Parking Area) located to the south of the railroad tracks, and the southern trailheads of two trails, the Mary Jemison Trail and Gorge Trail.

As shown in **Figure 3-3** above, Park Road currently passes through the Norfolk Southern right-of-way close to the edge of the gorge and crosses beneath the railroad tracks in a grade-separated crossing. As discussed below under "Geotechnical," based on preliminary geotechnical investigations, the foundations for the new bridge must be anchored west of the existing gorge face. This would require shifting Park Road west of the new bridge foundation and therefore west of its current location. **Figure 3-4** illustrates the proposed realignment of Park Road. The proposed realignment would also remove a sharp bend in the roadway.

As shown in **Figure 3-3**, the small (approximately 4,500-square-foot) parking lot to the south of the existing western bridge approach (Highbridge Parking Area) would also be relocated as part of the Project. Approximately half of this parking lot is located within Norfolk Southern's existing right-of-way and the other half is within the area to be acquired by Norfolk Southern for the Project. A new, larger parking lot would be constructed north of the new bridge in the area where Park Road's sharp bend would be removed (see **Figure 3-4**). The parking lot would be increased from 17 spaces to 34 spaces, with the new parking area including a grassy island to manage stormwater runoff, improve traffic flow, and minimize overall impervious surfaces.

**Figure 3-3** also shows the location of two park trails that begin within Norfolk Southern's right-of-way and pass beneath the bridge in a grade-separated crossing. Both of these trailheads would be shifted so that the trails begin outside of the railroad right-of-way, although both trails would continue to pass through Norfolk Southern property and beneath the new bridge in a grade-separated crossing.

### *Drainage Systems*

Construction activities would disturb an area greater than one acre and therefore the Project would require a State Pollutant Discharge Elimination System (SPDES) Permit associated with construction from the New York State Department of Environmental Conservation (NYSDEC). Erosion and sediment controls required as part of the SPDES permit would be developed during final design in accordance with Section 209 (Temporary Soil Erosion and Water Pollution Control) of the NYSDOT Standard Specifications in order to satisfy the Stormwater Pollution Prevention Plan (SWPPP).

The new bridge would have a solid (ballast) deck rather than the existing bridge's open deck. Under the Preferred Alternative, a portion of Park Road and the small parking lot in the vicinity of the new railroad bridge, Highbridge Parking Area, would be relocated. As part of the Project, the existing park stormwater drainage system in this area would also be relocated and redesigned as necessary. One stormwater outfall would be removed as part of gorge excavation required for the new bridge foundation. To the extent practicable, vegetated swales would be used to direct stormwater and allow it to infiltrate the ground. The new parking area would include a grassy island to manage stormwater runoff and minimize overall impervious surfaces. Where necessary, new catch basins would be created along the new parking lot and new roadway to collect stormwater, which would be directed via pipes beneath Park Road, as occurs today. These drainage measures would protect the integrity of the bridge foundations and adjacent infrastructure (roads, trails) by controlling drainage pathways and to protect water quality in the Genesee River by limiting erosion and sedimentation. The stormwater management features would be designed in consultation with OPRHP.

### *Geotechnical*

Rock exposed to water and air weathers over time. This occurs as moisture collects in small fissures in the rock, which expands when it freezes and increases the size of the fissure until eventually the rock breaks off. The speed at which this occurs varies greatly depending on the type of rock. Near the existing Portageville Bridge, the rock has been prone to such erosion, and a major stabilization of the cliff face was required in the 1950s to address this issue. Geotechnical analysis of the gorge face at the location of the new bridge confirms that these issues need to be addressed during construction of the new bridge.

A preliminary geotechnical investigation was performed for the Project. Geotechnical engineers used rappelling equipment to investigate the face of the gorge wall and determined that the rock near the face of the gorge is not capable of supporting the arch bridge foundation. The geotechnical engineering report for the Project is provided in **Appendix E** of this DEIS.

The arch foundations must be founded in competent rock capable of resisting the large vertical reaction and horizontal thrust that are inherent to an arch bridge. Based on a conceptual level structural design for the arch structure that provided the overall arch geometry, the magnitude of the vertical and horizontal forces associated with the structure, and the location of the arch thrust blocks that transmit the forces into the supporting rock, it was determined that the arch buttresses must be founded farther into the gorge wall than at the face. In order to determine where suitable rock existed, angled borings were taken from the top of the gorge that ended behind the gorge wall at the location where the thrust blocks would be founded. After a geotechnical analysis of the data recovered from the borings, the rock at this location was found to be competent and capable of carrying the imposed forces. To anchor the bridge supports in competent rock, areas of the cliff face on each side of the river would be excavated to form two "pockets" (one on each side), so that the bridge supports can be secured to rock that is deeper within the cliff.

For safety reasons it is not possible to cut a vertical face into the gorge wall to expose the location where the buttresses would be founded. If the rock face is cut too steeply it becomes unstable and the risk of rock sloughing off and onto the active construction of the buttresses is too great. The rock at this location therefore must be laid back at a slope of about one to five to provide a stable face.

As a result, a portion of Park Road, which is located on the west side of the gorge, must be shifted westward, as discussed above.

Controlled blasting would be used to perform the rock excavation. Based on the current level of design, the existing rock bolts that are present in the gorge face in this area and serve to support the gorge would not be disturbed by the required excavation.

A total of 13,800 square feet of existing cliff face surface would be blasted and removed to create the two pockets in which the bridge supports would be anchored. Within the two pockets, a total of 24,000 square feet of bedrock would be newly exposed and would require stabilization to prevent future erosion.

The stabilization system proposed is installation of metal drape netting (a metal mesh curtain) on the newly exposed rock areas. The metal drape netting would protect the main supports of the bridge from structural damage that would otherwise occur due to erosion, and prevent rockfall. This system would stabilize the rock by using weep holes to drain water from the rock and metal anchors drilled in the rock to consolidate the rock. In the past, near the existing bridge, the exposed area was covered with shotcrete, a concrete mixture that was sprayed over the rock. Shotcrete was also originally proposed for the new bridge, but the design has been revised to include drape netting to reduce the Project's impact to visual and ecological resources. The drape netting is less visible and will allow vegetation to grow on the rock, which may eventually conceal the drape netting.

Approximately 19,000 square feet of newly exposed vertical cliff face within the two pockets will be treated with drape netting over rock dowels. The remaining 5,000 square feet of area within the pockets will be stabilized with rock dowels only.

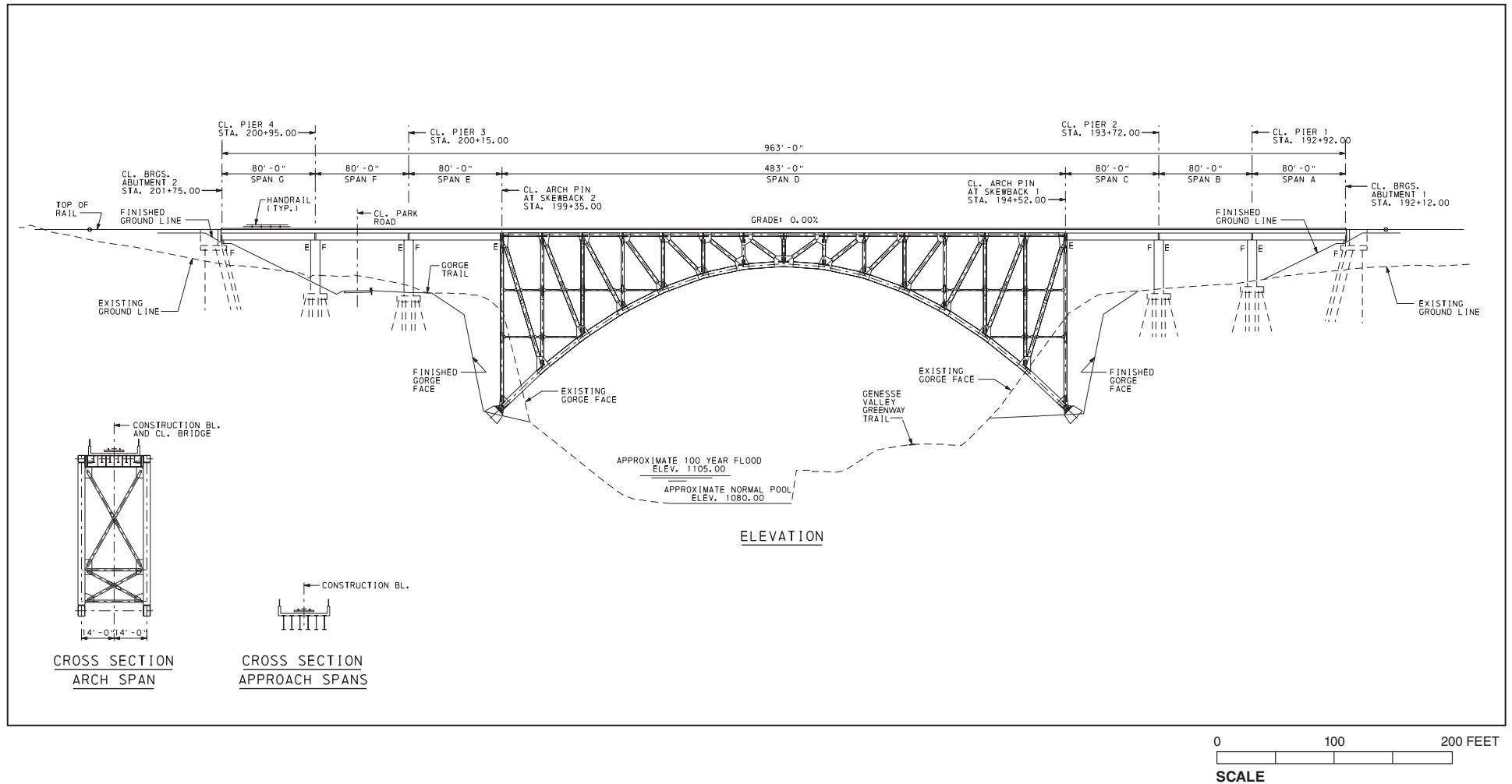
The drape netting will be visible when viewed from directly across the river and locations nearby. Due to its location within the pockets that house the new bridge supports, the drape netting is unlikely to be visible when viewed from downriver (the north) or upriver (the south).

Approach span piers would be either spread footings or pile supported footings depending on the depth of overburden soil at the pier location. The determination of the type of footings would be made during final design, but no special treatment is expected at these locations.

### *Structures*

The existing bridge would be replaced with a new single-track bridge. The main span would be a steel arch approximately 483 feet long. **Figure 3-6** provides a profile view of the proposed bridge.

On each side of the river, there would be approach bridge spans leading to the main arch span over the gorge. These spans would be steel multi-girder superstructures supported on concrete piers. The number and span length of the approach spans will be determined during preliminary engineering. Currently, the bridge abutments are anticipated to be located about 240 feet to the west and east of the arch foundation, with two concrete piers supporting the spans between the abutments and the arch. The total length of bridge would be approximately 963 feet.



### *Hydraulics of Bridges*

The Project site is located outside of the Federal Emergency Management Agency's (FEMA) 100-year floodplain, and this portion of the Genesee River is not a regulated floodway. Due to the steep banks of the Genesee River gorge, there is no floodplain present in the Project area. Since there would not be encroachment within a floodplain, a full hydrologic and hydraulic analysis to confirm a zero backwater increase is not warranted.

### *Utilities*

There are no known utilities within the Project site limits, and no new utilities are proposed to be located within the Project limits.

### *Railroad Facilities*

The Preferred Alternative would result in 3,300 new linear feet of railroad facilities. The new bridge span would be 963 feet, and 1,200 feet of new track would be laid both east and west of the new river crossing. The existing railroad bridge would be removed. The existing track approaches would also be removed, and the land would be conveyed to Letchworth State Park.

The new rail bridge would span over Park Road and two hiking trails (the Gorge Trail on the west side of the river and the Genesee Valley Greenway Trail on the east side), which is the same condition as the existing bridge. There would be no new at-grade roadway crossings.

#### **3.4.4 Landscape and Environmental Enhancements**

To mitigate for the loss of forested areas in the new railroad right-of-way, Norfolk Southern will work with OPRHP to develop a tree planting program. The Project would also incorporate measures to minimize impacts from stormwater runoff, impacts to viewsheds, impacts to historic resources, impacts to parklands, and impacts from construction activities, as discussed further in Chapter 4.